JDEP Overview

October 2003

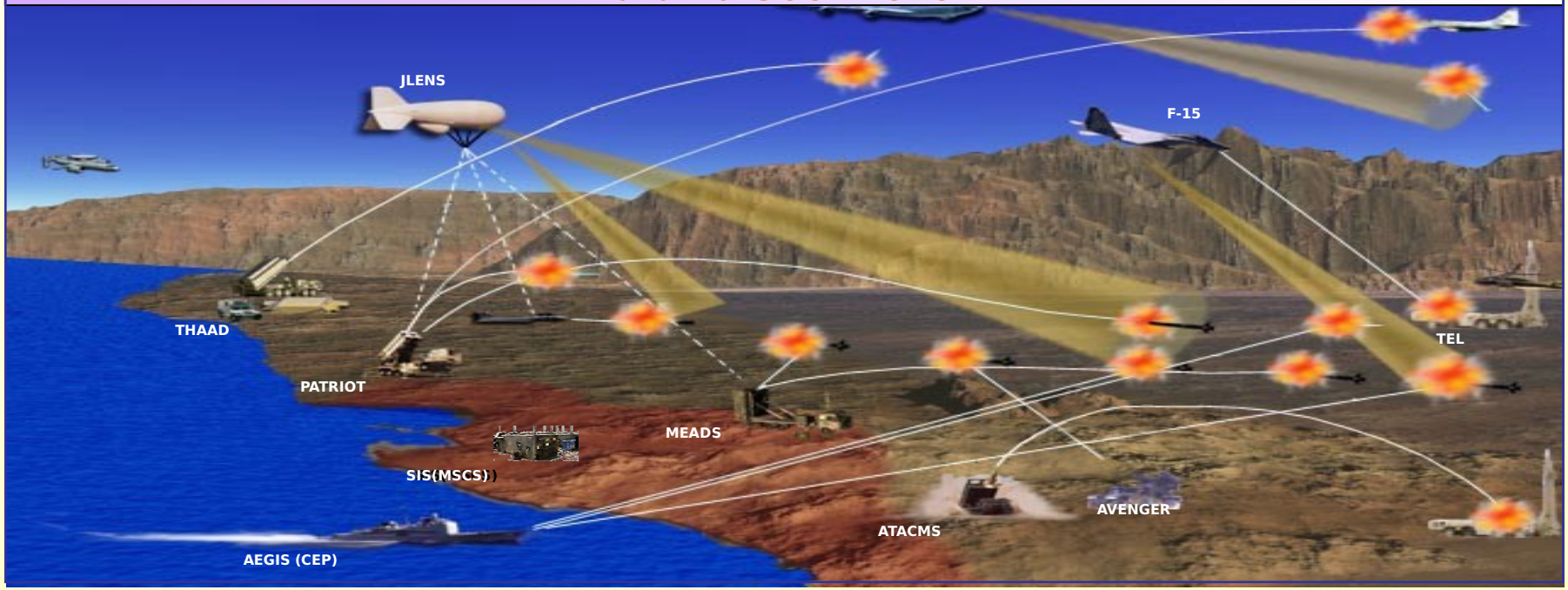
Topics

Definition
Management Structure
Funding
JTAMDO & Service Participation
Technical Coordinator Functions
Technical Framework
FY03 Activities
FY04 JTAMDO Event Objectives
Acquisition Program Support

JDEP Definition

JDEP is a DoD-wide capability for Service and Joint engineering, integration, and test resources to provide system of systems battlefield representative environments in support of developer, tester, and warfighter requirements

Based on JS/PUSD (AT&L) Letter, JETF Report, PDB 725, DPG, FY02-FY07 PDM, AT&L Strategy, and Transition Memo



JDEP Management Structure

Board of Directors

★★★

JS, AT&L, CIO Chaired

Oversees investment and management of JDEP capability and infrastructure (members includes JFCOM, DOT&E, and Services)

Defense Information Systems Agency

★★

Mr Frank Hollerness

Provides DoD level programmatic leadersh

Develops investment plan and managemen

Oversees program execution by Coordinat

Joint Interoperability Test Command

Col Victoria Velez

Develops and maintains the infrastructure

Assists users address interoperabil

Users (PMs, test agencies, etc.) work within their existing structures to conduct events with JDEP support to meet needs

JDEP Funding

Program Decision Memorandum

	FY02	FY03	FY04	FY05	FY06	FY07	FY02-07
JTAMDO 60.6M	$ 10M	$ 10M	$ 10M	$ 10M	$ 10.2M	$ 10.4M	$
Marine Corps	.9M	1.0M	1.2M	1.4M	1.2M	1.2M	6.9M
Navy	5.0M	5.9M	5.2M	5.9M	5.9M	$5.9M	33.8M
Air Force	4.6M	6.4M	6.7M	6.7M	5.0M	5.0M	34.4M
Army 20.4M	1.7M	3.4M	4.0M	3.7M	3.8M		3.8M
DISA	4.2M	4.3M	4.4M	4.5M	4.5M	4.5M	26.4M
Total Requirement 30.8M 182.5M		26.4M	31.0M	31.5M	32.2M	30.6M	

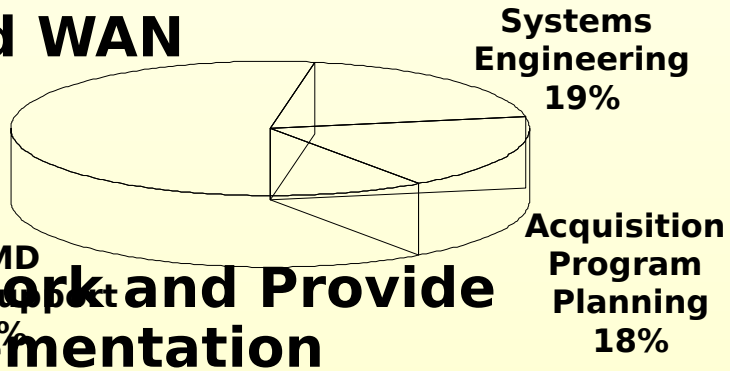
PDM added funds as shown in the table to fund the JDEP at levels specified in the Defense Planning Guidance and transferred JDEP responsibility to the Joint Interoperability Test Command at Fort Huachuca, AZ

JTAMDO and Service Participation

- **JTAMDO oversees their investment**
  - **"Reusable" capability for development, testing, training and operational application of the integrated air and missile defense**
  - **Prioritization and execution of JTAMD nominated event objectives**
- **Services Nominate**
  - **JTAMD objectives or events, upgrade facilities and capabilities**
  - **Conduct or participate in JTAMD events**

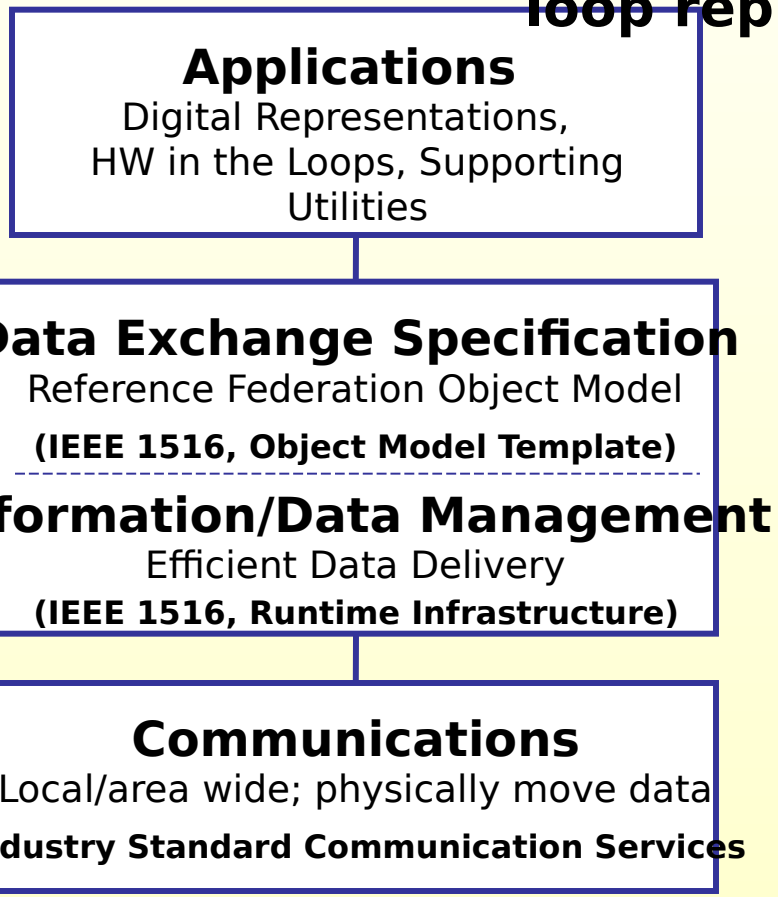
JITC Technical Coordinator Functions

- **Systems Engineering**
  - Maintain Technical Framework
  - Coordinate Common Capability Solutions
- **Air and Missile Defense Event Support**
  - Provide Event Coordination & Engineering Support
  - Configure and Validate M&S Middleware and WAN
- **Acquisition Program Planning**
  - Promulgate Technical Framework and Provide Guidance on M&S Implementation



JDEP Systems Engineering Technical Framework

Applies industry standards and commercial products to support federations of simulation and hardware in the loop representations

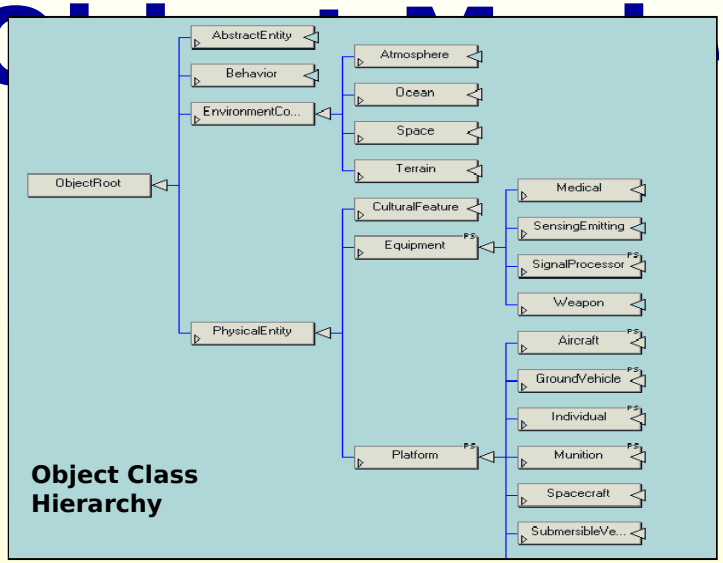


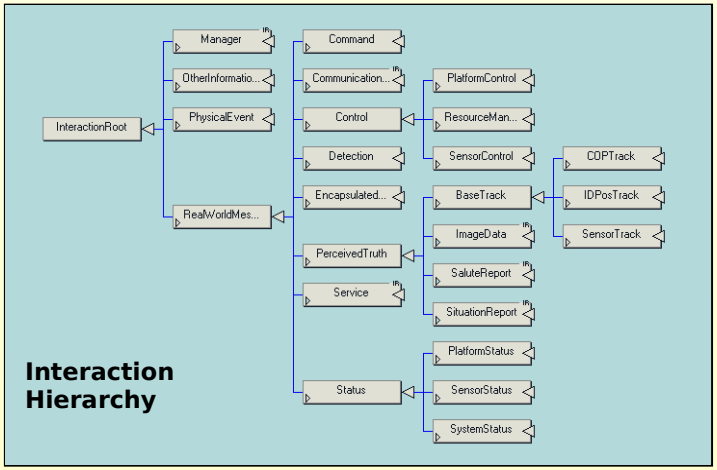
- **Applications include models and simulations, hardware in the loops, and supporting utilities**
- **Application exchange M&S information using a Federation Object Model to specify the data exchange and Runtime Infrastructure to provide data delivery services**
- **Communications services to physically move the data is based on industry and DoD standards**

JDEP Systems Engineering

Federation Object Model

- Defines a data model for exchange of persistent and transient information
- Developed in coordination with Coalition and Service subject matter experts (e.g., JSB, JVB, CISE)
- Implemented in logical hierarchy that allows users to select the appropriate representation
- Provides a common starting point for engineering federations, promoting re-use across applications

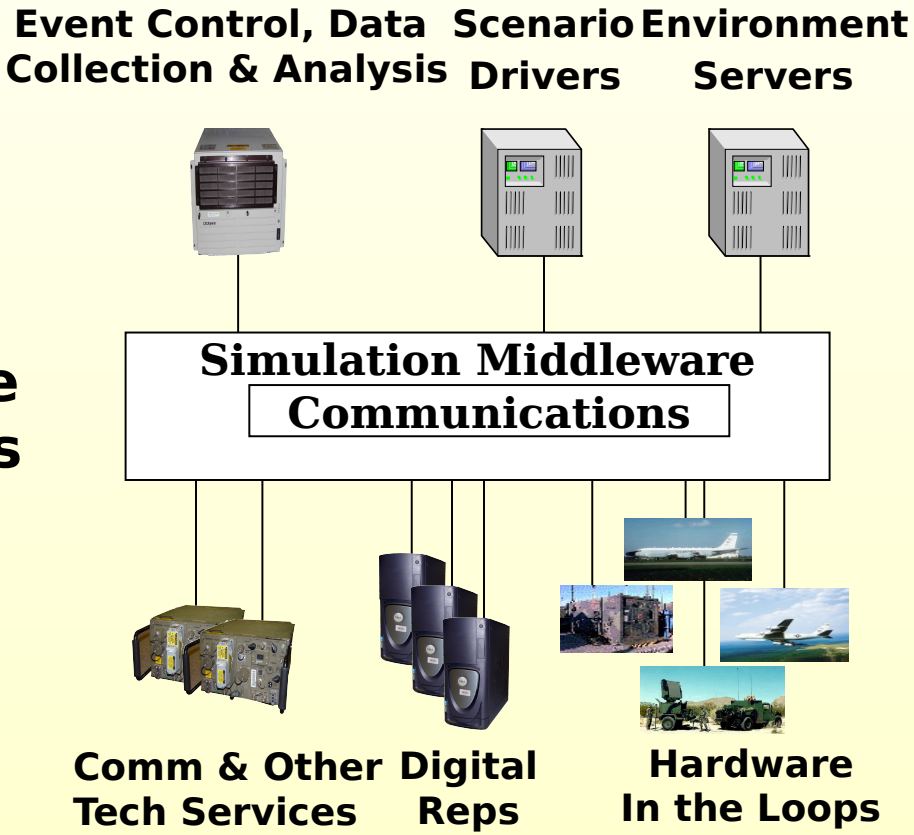




JDEP Systems Engineering Common Capabilities

JDEP uses "Infrastructure Builds" to evolve common capabilities required to provide representative battlefield environment for events

- **Coordinate with users to determine requirements**
- **Query industry through RFI to determine capabilities**
- **Perform integration to ensure reliable performance with other JDEP components**
- **Optimize overall federation performance to meet user needs (runtime performance, scalability, etc.)**



JTAMD Event Support Functions & Profile

Design, Implement, and Validate Network Backbone, VLANs and SIM Middleware

Monitor SIM Middleware and Network Performance and Support Lessons Learned

Coordinate Federation Engineering and Operations Center Support

Participate In Event WG Meetings and Review Relevant Documentation

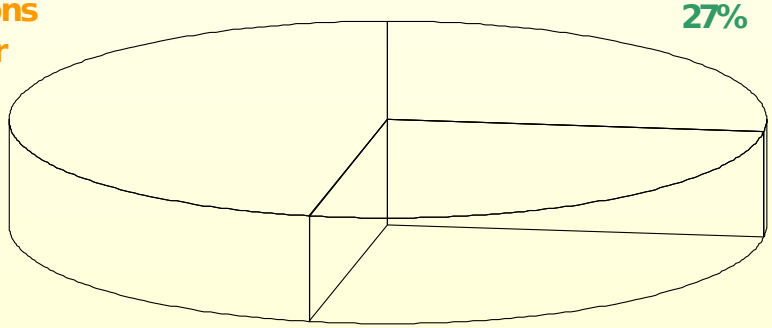
Monitor Event and Coordinate Lessons Learned

Provide SME Support for Common Capabilities

Provide Network Installation Support, Security Accreditation Guidance

Provide Guidance During Federation Design, Development, Integration, and Apply JDEP Reference FOM

Provide Tech Assistance for Event & Support Lessons Learned



FY03 JTAMD Activities

- Updated JDEP Technical Framework Systems Engineering Reference FOM
- Initiated JDEP Infrastructure Improvements (Comm, Sensor, Environment Services)
- Supported Single Integration Air Picture Systems Engineering Experimentation
- Supported USAF Joint Cruise Missile Defense and Critical Area Air Defense
- Supported Navy Joint Test Event, Early Warning, and Time Sensitive Targeting Events
- Performed Network Engineering & Expansion

FY03 JTAMD Patriot Event Overview

Event Description

- Assess impact of time synchronization data registration errors on Track Quality and Correlation/Decorrelation
  - Evaluate the sensitivity of HWIL SIAP performance to sensor registration biases in data registration
  - Evaluate the sensitivity of HWIL SIAP performance to "host-to-absolute" reference time synchronization biases

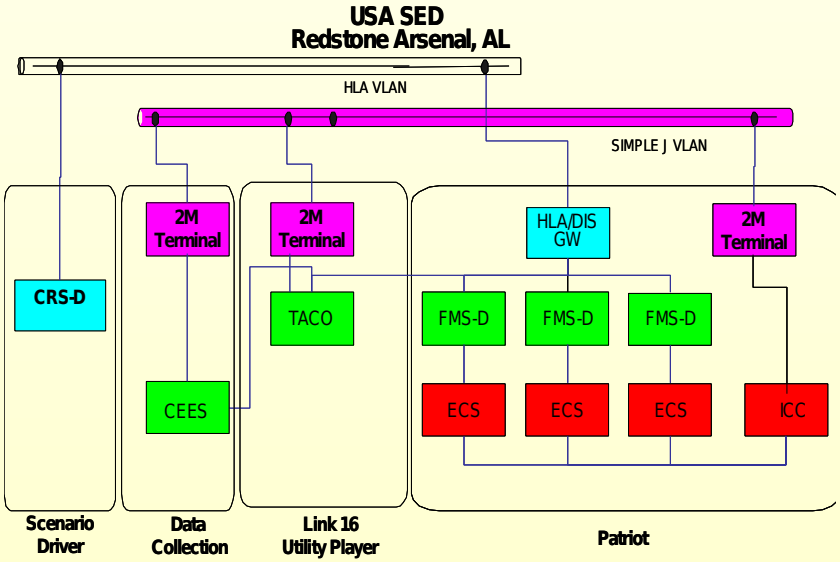
Event Participants

- Test Coordinator: Joint SIAP Systems Engineering Office (JSSEO)
- Test Director: Systems Engineering Directorate (SED)
- Participants:
  - Common Reference Scenario Drive (CRS-D), Patriot (1 ICC, 3 ESCs), Utility Player (TACO), JTIDS 2M Terminals

Products/Milestones

Products/Milestones	Date
Federation integration	17Aug-22 Aug
Complete Federate V&V	28 Aug
Event Dry Run	8 Sep-12 Sep
Event Runs for Record	29 Sep–3 Oct

Configuration



FY03 JTAMD CAAD Event Overview

Event Description

- **Assess homeland air defense architectures that utilize existing sensors from warfighter inventories**
  - **Measures surveillance and detection of incoming cruise missiles and terrorist threats against specific sites**
  - **Uses hardware-in-the loop and simulated systems**

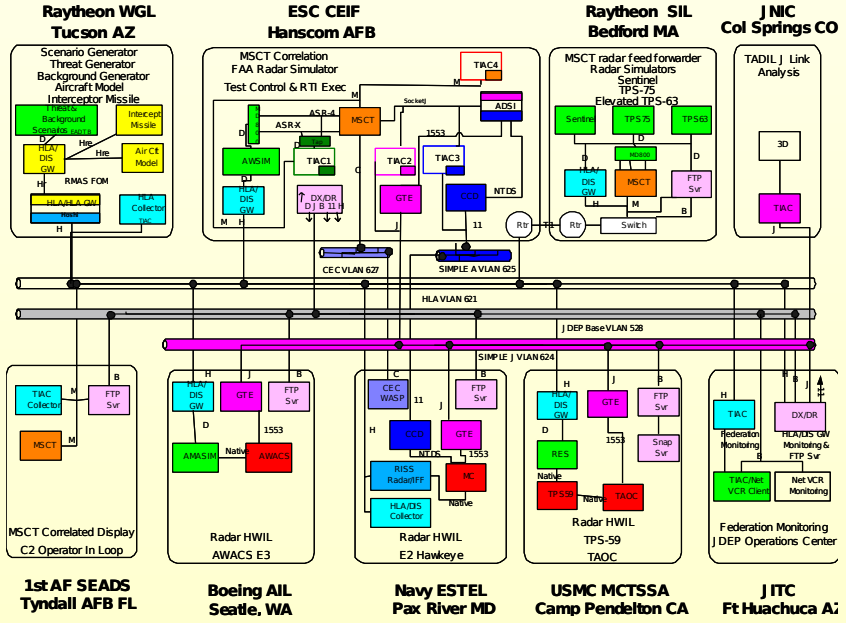
Event Participants

- **Ops Lead: 1st AF/CONR**
- **Tech Lead: Electronic Systems Center**
- **Facilities/Sites:**
  - ESC, Hanscom AFB MA, Raytheon Bedford MA, Raytheon Tucson AZ, Boeing Seattle WA, Navy Patuxent River MD, Marine Corps Camp Pendleton CA, 1st AF Tyndall AFB FL, JNIC Colorado Springs CO

Products/Milestones — Date

- **Network Installation**
- **CAAD Setup/ Integration 28 Jul–8 Aug**
- **CAAD Event 29 Sep–10 Oct**

Configuration



FY03 JTAMD JCMD Event Overview

Event Description

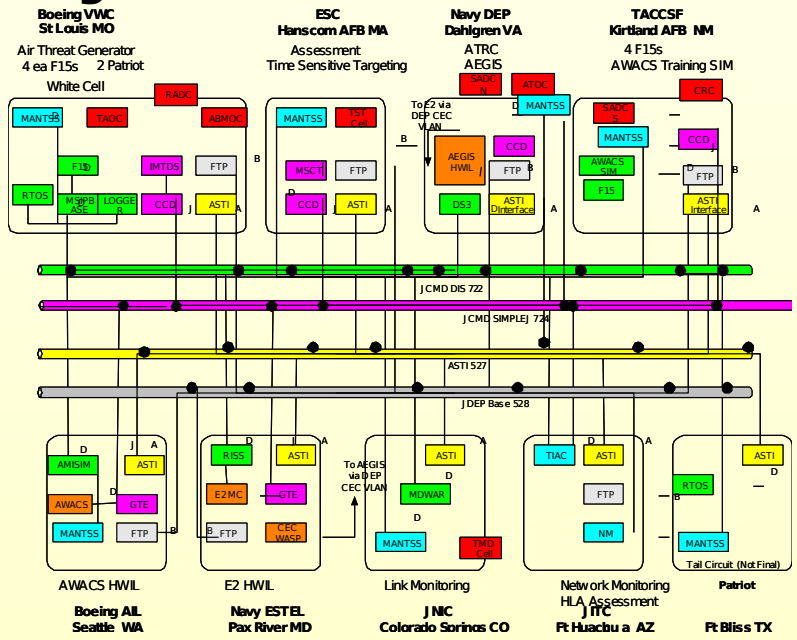
- Investigate, evaluate, and improve the operational effectiveness of Joint defense against cruise missiles
  - Assess and document current JCMD processes and procedures in realistic operational scenarios (baseline)
  - Identify and verify potential improvements in warfighting concepts

Event Participants

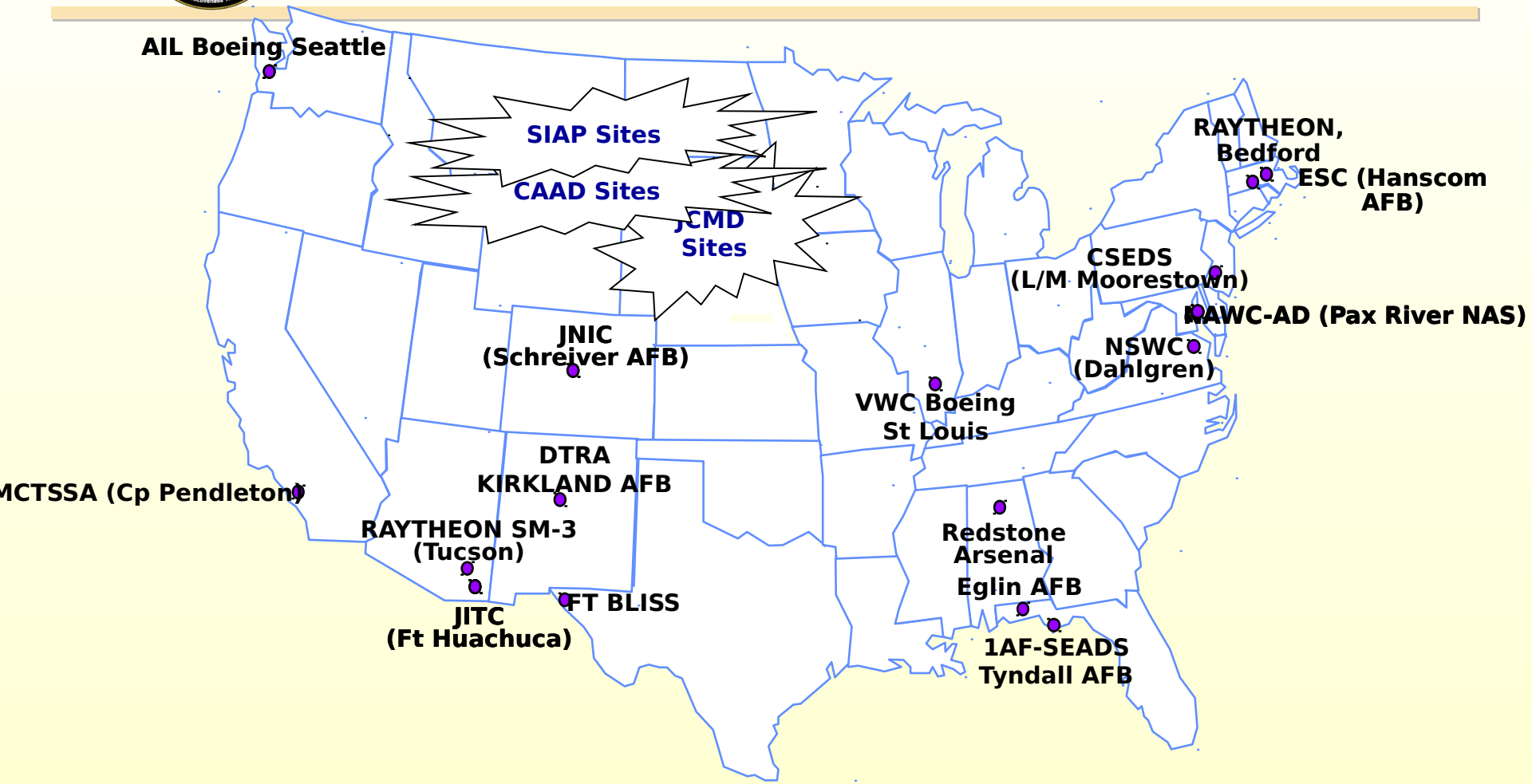
- Operational and Technical Lead: OSD JCMD JT&E
- Facilities/ Sites:
  - Boeing VWC St Louis MO, ESC Hanscom AFB MA, Navy ATRC Dahlgren VA, TACCSF Kirtland AFB NM, Boeing AIL Seattle WA, Navy ESTEL Patuxent River MD, JNIC Colorado Springs CO, Army Ft Bliss TX

Products/Milestones	Date
Network Installation	14 Jul–18 Jul
JCMD DIS/Net Checkout	02 Sep–05Oct
JCMD MPC/Demo	15 Sep–19 Sep

Configuration



JDEP Event Sites FY02-FY03



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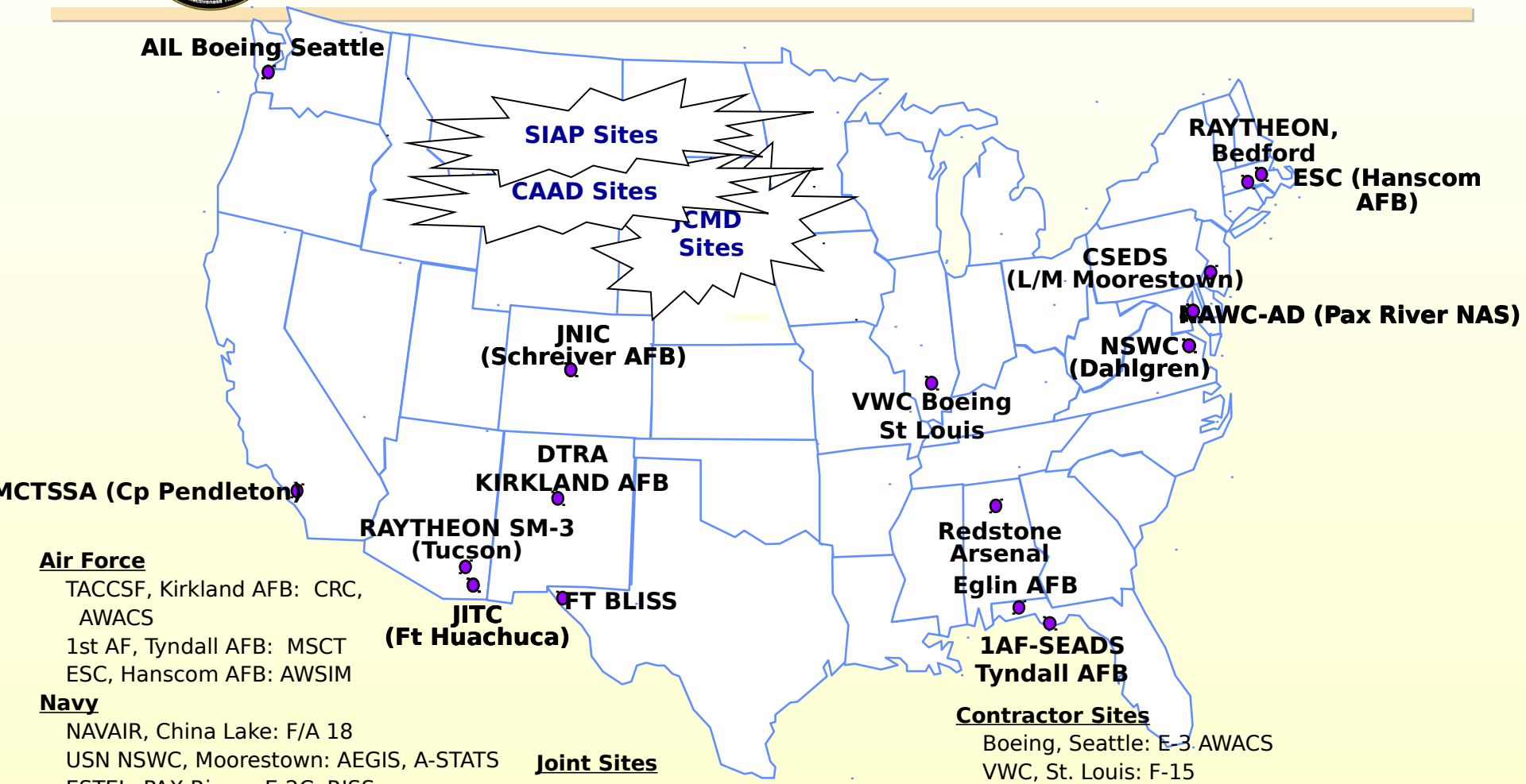
JDEP Event Sites FY02-FY03



Air Force

TACCSF, Kirkland AFB: CRC, AWACS

1st AF, Tyndall AFB: MSCT

ESC, Hanscom AFB: AWSIM

Navy

NAVAIR, China Lake: F/A 18

USN NSWC, Moorestown: AEGIS, A-STATS

ESTEL, PAX River: E-2C, RISS

Dahlgren, Aegis, DS3

Marines

MCTSSA, Camp Pendleton: TAOC, RES

Army

SED, Redstone Arsenal: Patriot EMS-D

Joint Sites

JPO: DISN-LES Provider

JITC, Fort Huachuca: JDEP Operations

JNIC, Schriever AFB: JSWS

Contractor Sites

Boeing, Seattle: E-3 AWACS

VWC, St. Louis: F-15

Raytheon, Bedford: JLENS, MSCT

Raytheon, Tucson: Interceptor Missile, Aircraft Model, Threat Generator

Boeing, Seattle: AWACS, AMASIM

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Proposed FY04 JTAMDO Objectives

- **Block 0 Upgrade to Patriot PDB-6**
  - **Assess Correlation/De-correlation, Formation Tracking, and Data Registration**
  - **Participants: Patriot, Aegis, E-2C**
- **Defense of Korea/Japan**
  - **Assess TTPs, Caps and Lims and support CID, Coalition Interoperability**
  - **Participants: 4xCVBG, Patriot, AWACS, CAOC, TAOC/TPS-59**

Proposed FY04 JTAMDO Objectives

- **Integrated Fire Control Foundation**
  - Assess interoperability of Aegis 6ph3 and ability of force to conduct cooperative engagements
  - Participants: Aegis, E-2C, AWACS, F-15, CAOC, TAOC/TPS-59, Patriot, JLENS
- **Constellation Test Bed**
  - Assess operational concepts, performance, & military utility of Integrated GMTI systems
  - Participants: ESC, CWIN, VWC, LM GVN, Aegis-Dahlgren, AFRL

Proposed FY04 JTAMDO Objectives

- **Joint Engagement Assessment Network**
  - **Address FIOP Task 2 Focus, support DCGS and JFN Development, delineate Interoperability issues and foster Joint Acquisition for DCGS and JFN**
  - **Participants: Navy Strike Cell, ESC, TAOC, AFRL**
- **Capability Upgrades**
  - **Continue development of better comm, sensor and environmental representations**

Proposed FY04 JTAMDO Objectives

- **Integrate digital representations for SIAP SE**
  - **Aegis (LMC representation – MADUSA)**
  - **Patriot (Sim being developed by SED)**
  - **E2-C (Identified E2XV (NG effort) to SIAP SE TF)**
- **Integrate Hardware-in-the-Loops for SIAP SE**
  - **AWACS, TAOC, F/A-18 for SIAP SE**

Acquisition Program Support

- Establish working relationship with major DOD acquisitions
- Identify and influence use of common framework for distributed testing
- Assist acquisition programs in application of common framework
- Determine and coordinate common capability requirement and solutions

Key Acquisition Programs

- Future Combat System
- Joint Strike Fighter
- Joint Integration and Interoperability of Special Operations Joint Test and Evaluation
- CVN 21 (future aircraft carrier)
- Distributed Common Ground/Surface Systems
- Multi-Sensor Command and Control Aircraft System
- Common Aviation Command and Control System
- DD(X) Future Surface Combatant Program

DEFENSE INFORMATION SYSTEMS AGENCY

JOINT DISTRIBUTED ENGINEERING PLANT
JDEP
Bringing Interoperability to Joint Forces

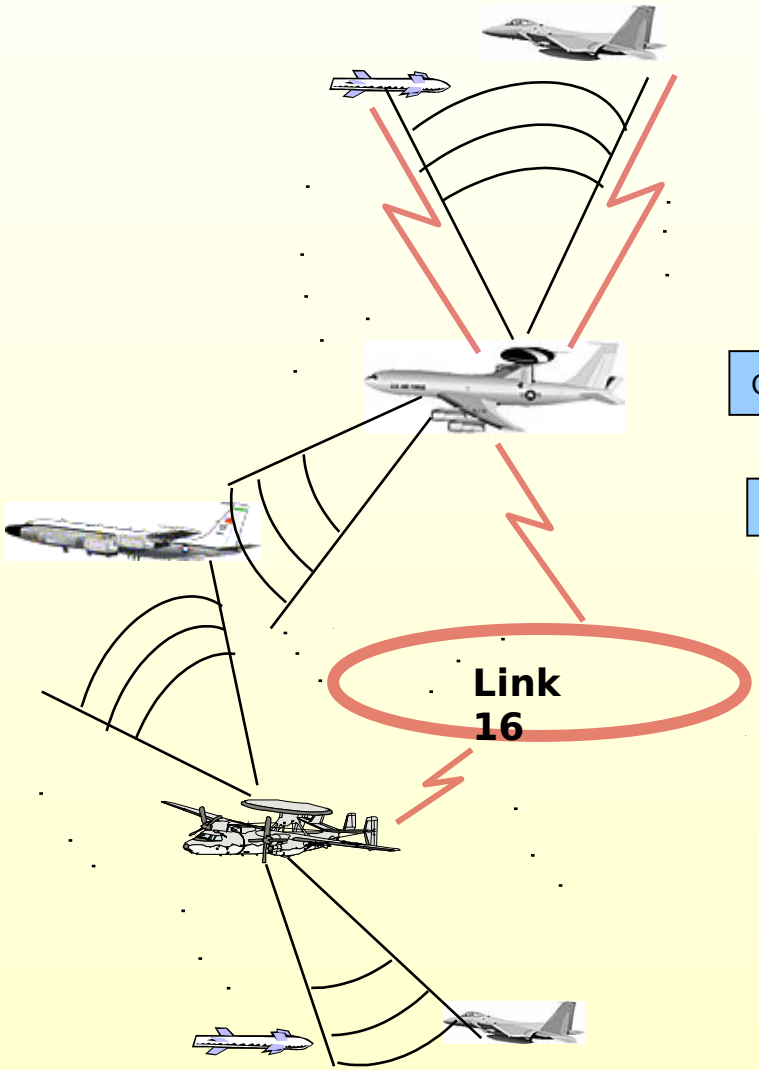
Standard JTAMD Site

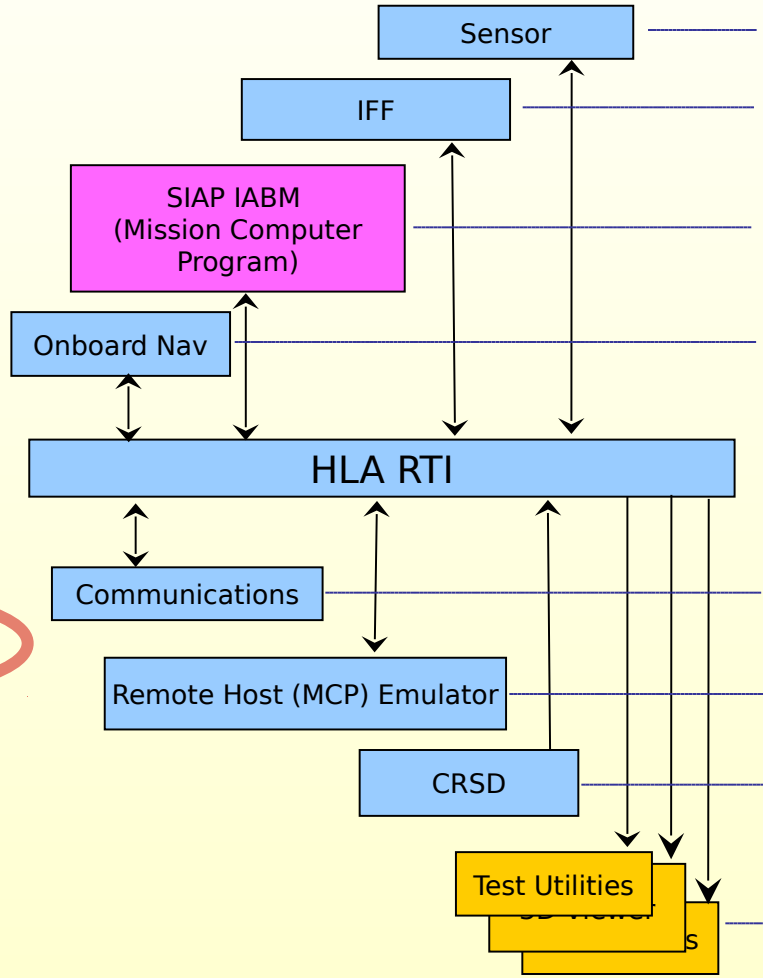
"Standard" Core Package: Required for new sites without DISN-LES	
ATM Switches (2 ea) KG-75 Fastlane/Rack/UPS/Misc OOB Router/Ethernet Switch/ASTi/Sphere Phone/VTC Overhead/GSA/Spares/Repairs/ 1 Year BW (10 MB SCR)	$350,000
"Extended" Core Package: **Required for all sites (with or without DISN-LES)**	
GPS Timing Equipment DXDR Server NetVCR/Sniffer Comms Server/TIAC (or equivalent) Utility Player	$200,000
Installation and recurring costs not included	

JDEP Infrastructure Build (IBuild)

- **Purpose:**
  - **Allow for prototyping, experimentation, and integration of new JDEP capabilities *prior* to fielding to sites for analysis use**
    - **Reduces time required for integration at user sites**
  - **Verify that the federation results match with design expectations**
  - **Provide the means to evolve JDEP capabilities over time**
    - **New simulations and HWIL systems can replace existing capabilities, as necessary**
  - **Being implemented at MITRE, McLean**

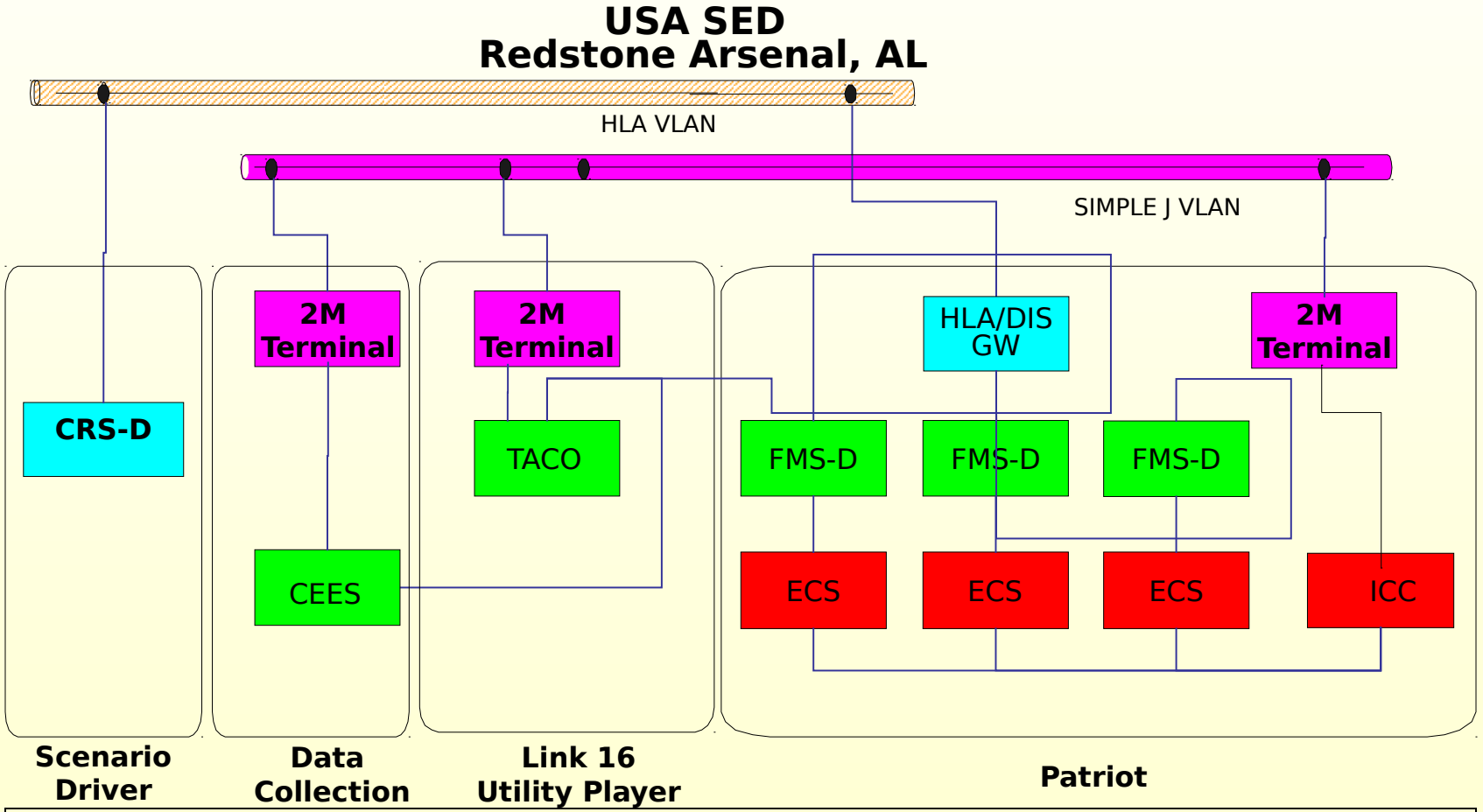
IBuild Version 1 – Supporting Analysis of SIAP's IABM





- Represents onboard radar system (E2C, AWACS, etc._
- Represents Interrogation Friend or Foe (IFF)
- Represents SIAP's Integrated Architecture Behavior Model
- Represents onboard navigation (accelerometer, ring-laser gyro, etc.) .
- Communications Simulations, primarily Link 16
- Generates remote tracks on other host platforms
- Common Reference Scenario Driver – Represents flight paths of all aircraft in scenario
- Test Utilities (Control and monitoring of federation, data analysis)

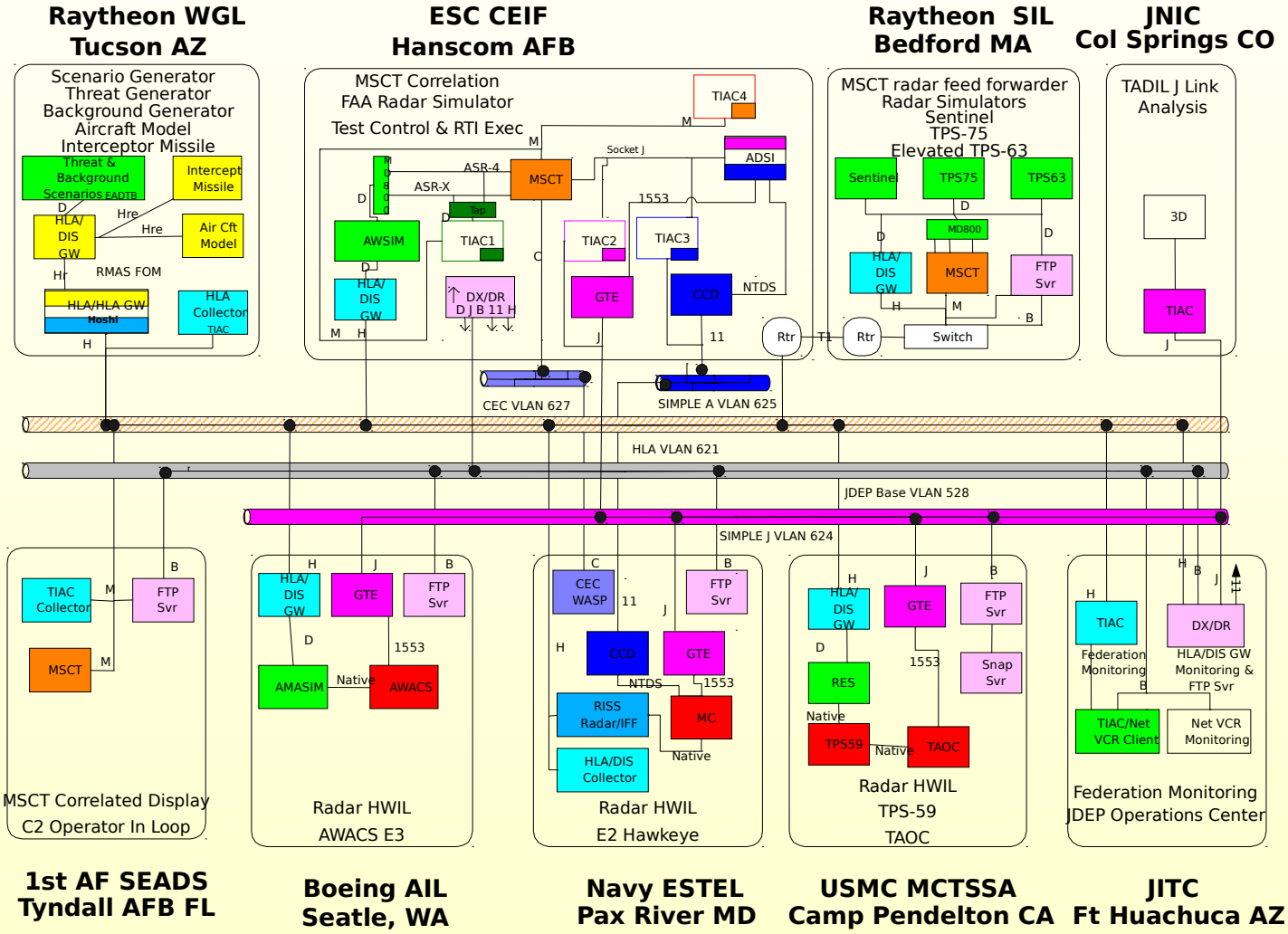
JTAMD/Patriot Configuration



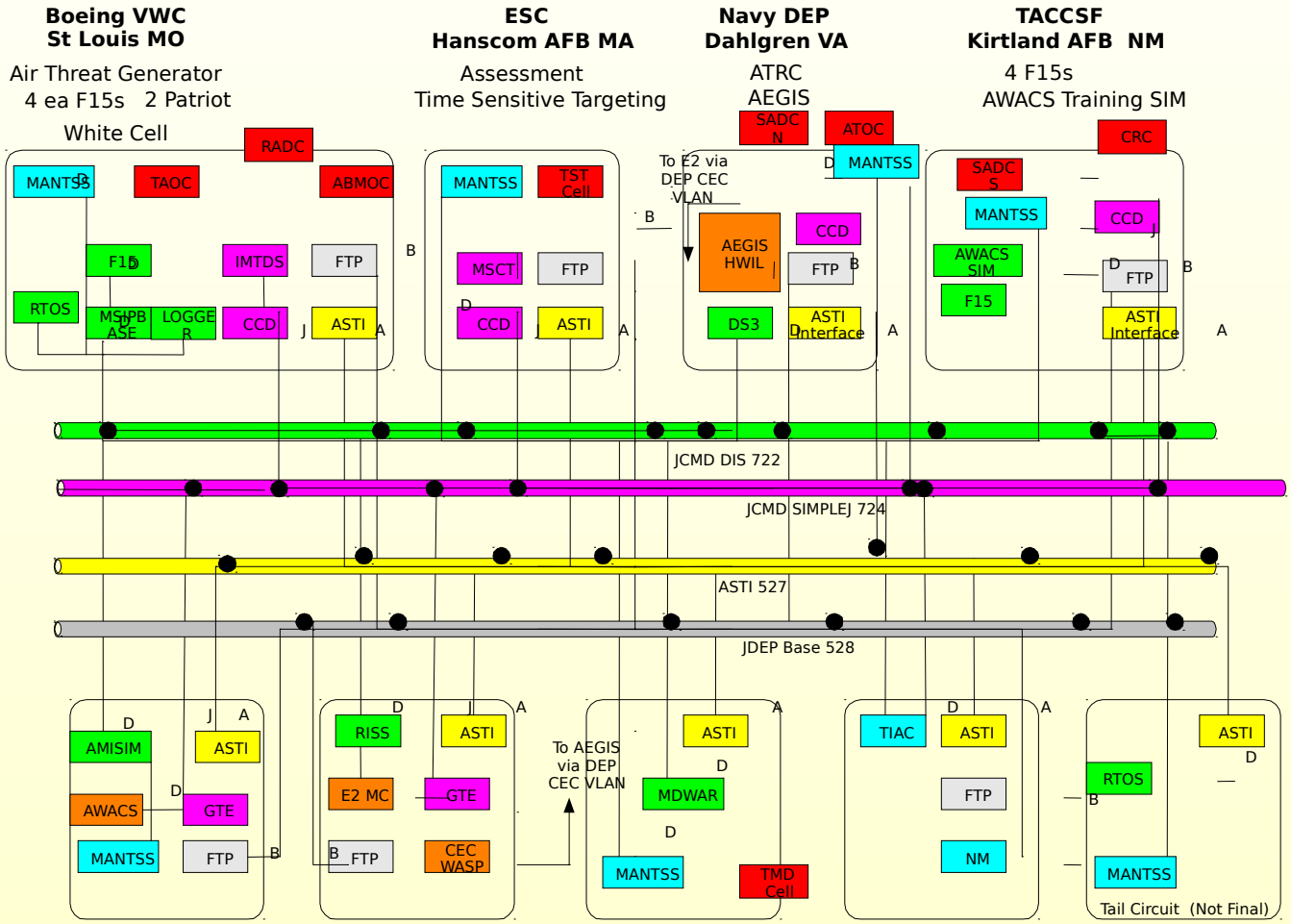
Legend

CRS-D Common Reference Scenario; FMS-D – Flight Mission Simulator – Digital; CEES – C4I Engineering and Evaluation System; ECS – Engagement Coordination System; ICC – Interface Control Center

JTAMD/CAAD Configuration



JTAMD/JCMD Configuration



FY03 Joint Navy Test Event Overview

Event Description

- Test the interoperability testing with the Boeing AWACS E3 Avionics Integration Laboratory (AIL) and the US Army PATRIOT System Test Facility (PSTF) with the Navy Combat Systems using Link-16, Link-11 over a DIS network.

Products/Milestones

Ping/ELAN Test	24-25 July
End Device Ping Test	8-9 August
DT-801-IIIG Quicklook/Dry Run	4-6 August
Large-Scale Test/Korean Theater of Operations	11-15 August

Event Participants

- JDEP Sites
  - ESC, Hanscom AFB, MA (CAOC)
  - SED, Huntsville, AL (Patriot HWIL)
  - AWACS Integration Lab, Boeing, Seattle, WA
- NDEP sites
  - China Lake (F/A-18)
  - San Diego (E2C?)
  - Dahlgren (Aegis)

Configuration

FY03 Early Warning Event Overview

Event Description

- **Assess the interface and compatibility of radar data over the selected communication networks through to the TDPs. Provide USSTRATCOM and MDA analysis data to feed decisions on how to integrate radar into the current and future early warning architecture family of systems.**

Event Participants

- **Test lead: USASTRATCOM/MDA**
- **Participants:**
  - **JDEP Early Warning (JNIC)**

Products/Milestones	Date
• Early support to OIF	Feb 2003
• Laboratory infrastructure	Nov 2003
• Event Execution & Coordination	Jan-May 2004

Configuration

FY03 Time Sensitive Targeting Event Overview

Event Description

- TST application assessment/ development focusing on TST technical and operational issues; concept of a virtual, distributed TST Cell; Joint and Service Operational Concepts, Tactics, Techniques and Procedures (TTPs) for TST; and programmatic solutions to TST interoperability issues.

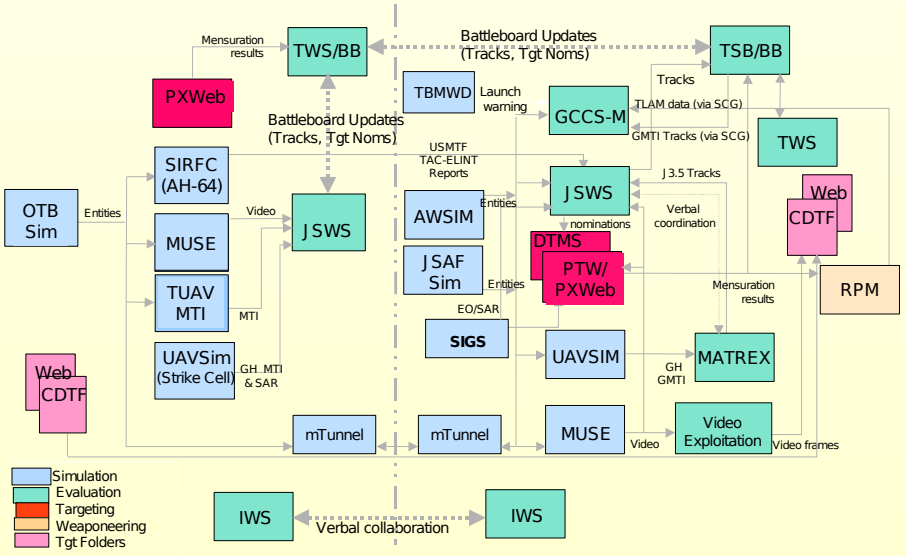
Event Participants

- Strike Cell Lab (McLean VA)
- Intel & Info Warfare Directorate (I2WD)
- S/W Interoperability Facility for Time Critical Targeting (SWIFT) Lab (Hanscom)
- AFRL (Rome)

Products/Milestones

– SIMEX 09	Nov 2002
– SIMEX 10	Feb 2003
– SIMEX 11	May 2003
– SIMEX 12	Aug 2003

Configuration



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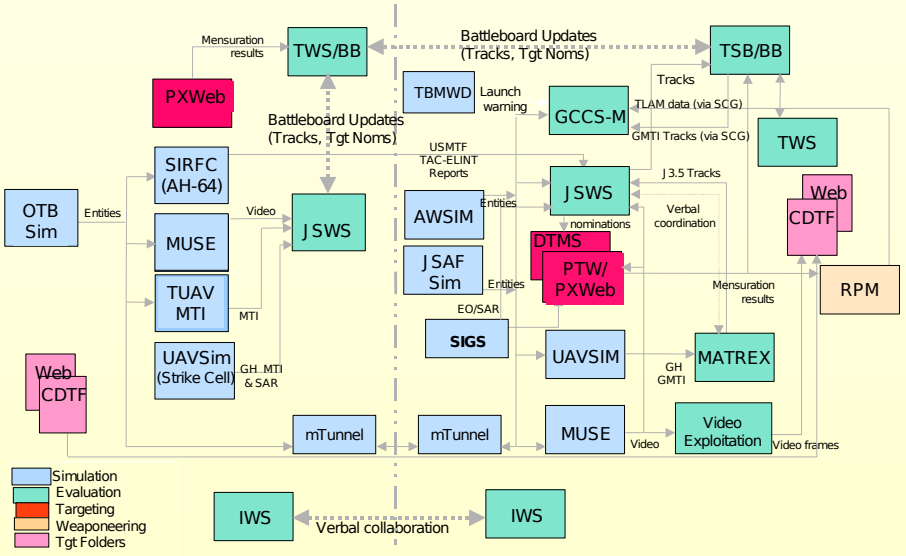

New FY04 Sites

Site	Event	System	Site	Cost
FAA	HLD	ARSA 4	Atlantic City, NJ	$550,000
FBI	HLD	TBD	TBD	$550,000
US Customs	HLD	TBD	TBD	$550,000
I2WB Lab	JEAN	Army Strike Cell	Ft Monmouth, NJ	$550,000
CTSF	JEAN	ABCS	Ft Hood, TX	$550,000
AFRL	JEAN, C2	CAOC	Rome, NY	$200,000
NG CWIN	C2	Strike Assets	Melbourne, FL	$550,000
RJ Lab	C2	Rivet Joint	Greenville, TX	$550,000
DUST	ADA	PAC-3	Ft Bliss, TX	$550,00